植 物 分 类 学 报 45 (3): 311–314(2007)
Acta Phytotaxonomica Sinica

doi:10.1360/aps06029
http://www.plantsystematics.com

Scapania paraphyllia T. Cao, C. Gao, J. Sun & B. R. Zuo, a new species of Hepaticae (Scapaniaceae) from Zhejiang, China

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Abstract A new liverwort species, *Scapania paraphyllia* T. Cao, C. Gao, J. Sun & B. R. Zuo, is described and illustrated from Zhejiang, China. The new species is closely related to *S. bolanderi* Aust. in having similar toothed leaves and pseudoparaphyllia. The former, however, differs from the later by having: (1) smaller plants; (2) pseudoparaphyllia numerous, not only growing on leaf axils but also on stems; (3) leaves divided into 1/4–1/3 of length and dorsal lobes as 1/3–1/2 size of ventral lobes; (4) cuticle of leaves rough, with large papillae up to 6–8 μm in diameter. The new species is also similar to *S. ampliata* Steph. with similar leaf shape and mouth of perianth. But it can be easily distinguished from the latter by having rough leaf cuticle and pseudoparaphyllia.
Key words *Scapania*, *Scapania paraphyllia* T. Cao, C. Gao, J. Sun & B. R. Zuo, Scapaniaceae, new species, Zhejiang, China.

Scapania (Dumort.) Dumort. is the largest genus of the Hepatic family Scapaniaceae and mainly distributed in temperate regions as well as on high mountain areas in tropical and subtropical regions (Schuster, 1974; Potemkin, 1998). About 230 species have been described in the world (Müller, 1905; Long, 1990) and more than 110 species were recognized by Potemkin (1998). Later, Potemkin (2002) put forward a phylogeny and classification of *Scapania* and recognized 87 extant species and one fossil species in the genus. There are about 50 species of *Scapania* reported from China (Horikawa, 1934; Zhang, 1985, 2000; Piippo, 1990; Gao & Cao, 2000; Potemkin, 2000, 2001; Cao et al., 2004; Potemkin et al., 2004; Sun et al., 2004). During the study of the Chinese bryoflora, we found a new species from Mt. Jiulong, Zhejiang Province, China, and described it as *Scapania paraphyllia* T. Cao, C. Gao, J. Sun & B. R. Zuo here.

Scapania paraphyllia T. Cao, C. Gao, J. Sun & B. R. Zuo, sp. nov. Fig. 1

Species nova haec affinis *S. bolanderi* Aust. sed planta brevi, sacpe purpurea, appendicibus pseudociliatis numerosis, pseudociliis simplicibus ad neque foliorum axillas et caules crescentibus; cellulis foliorum cuticulis scabridis, verrucis 6–8 μm in diam. differt.

Type: China. Zhejiang (浙江): Mt. Jiulong (九龙山), Suichang (遂昌), on rock, alt. 1360 m, *Z. L. Liu* (刘仲苓) *554* (holotype, HSNU; isotype, IFSBH), *Z. L. Liu* (刘仲苓) *553* (paratypes, IFSBH, HSNU).

Plants small, 1–2.0 cm long, brownish green to reddish. Stems single or branched, cortex

Received: 24 February 2006 Accepted: 18 December 2006
Supported by the National Natural Science Foundation of China, Grant Nos. 30370111, 30170076.
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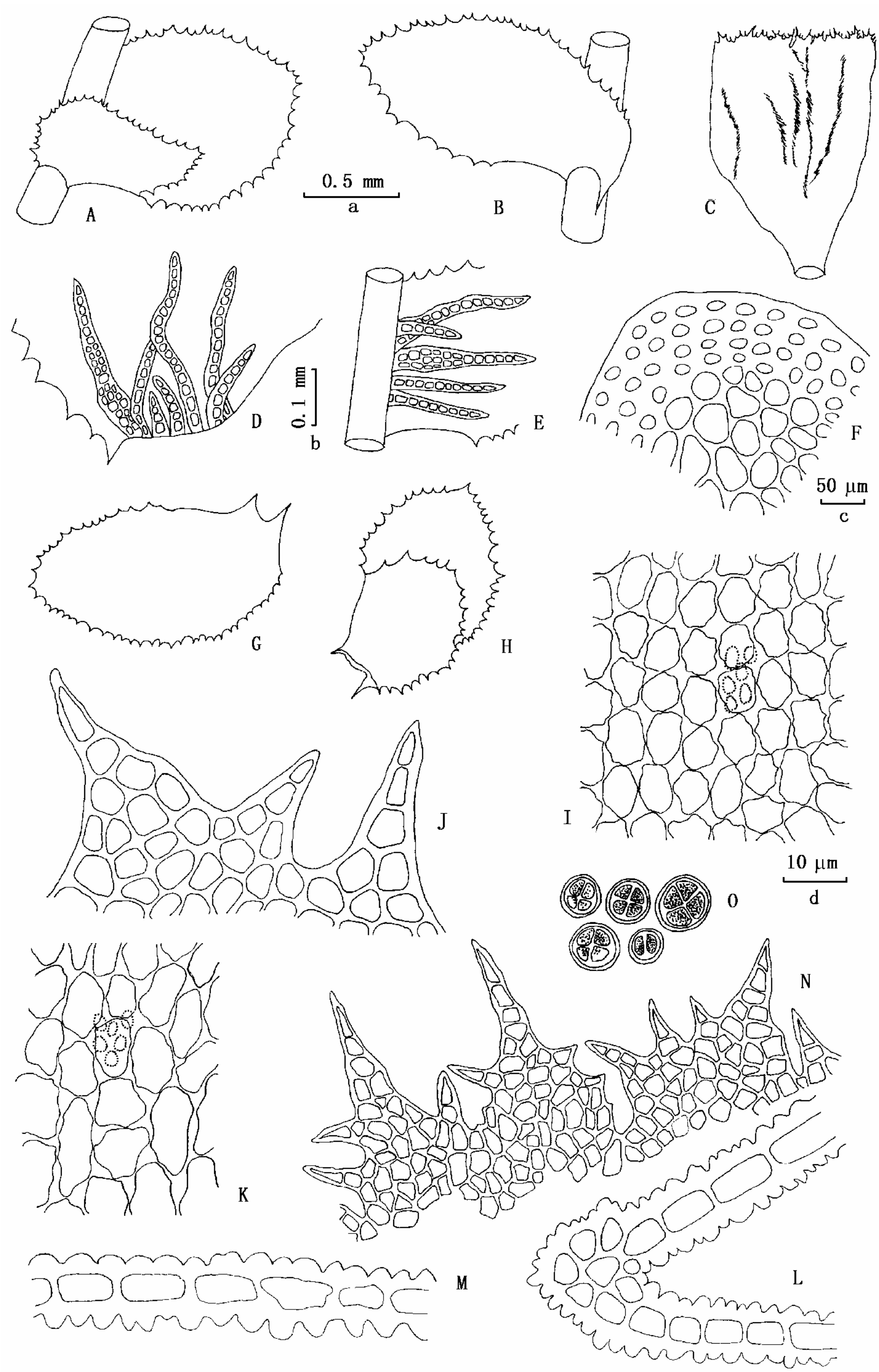

Fig. 1. *Scapania paraphyllia* T. Cao, C. Gao, J. Sun & B. R. Zuo. A, leaf insertion pattern, dorsal view; B, leaf insertion pattern, ventral view; C, perianth; D, pseudoparaphyllia at leaf axils; E, pseudoparaphyllia on stem; F, cross section of stem; G, H, leaves; I, median leaf cells; J, leaf margin teeth; K, basal leaf cells; L, cross section of leaf keel; M, cross section of leaf, showing the papillae; N, perianth mouth, showing their branching and terminal cells; O, gemmae. Drawn by B. R. Zuo & T. Cao from *Z. L. Liu 553*.
Scale bar: 0.5 mm for A–C, G, H; 0.1 mm for D, E; 50 μm for F, I, J–N; 10 μm for O.

consisting of 3–4 layers of red-brown, small cells with strongly thickened walls; medullary cells large, hyaline, thin-walled. Leaves contacted, unequally divided to 1/3 of length; keel short, about 1/4–1/3 of length of ventral lobe, straight to slightly curved. Pseudoparaphyllia numerous on leaf axils and stems, single and unbranched, 1–3 cells wide. Ventral lobes elongate-ovate, broad-rounded above, often with pointed-apex, not or slightly decurrent at base; dorsal lobes small, about 1/3–1/2 of size of ventral ones, elongate-ovate, somewhat concave with pointed-apex, not-decurrent at base. Margins of both lobes irregularly toothed; teeth 1–4 cells high, 1–3 cells wide at base. Three to four rows of cells near leaf margins small, hyaline, (9–14)11×13(8–15) μm, with evenly thickened walls; median leaf cells 15×19(19–21) μm, basal leaf cells (13–17)15×31(21–31) μm, with large trigones. Cuticle of leaves rough, papillous, papillae large, 6–8 μm in diameter. Perianth terminal, broad-ovate, compressed, with rather wide mouth, mouth ciliated, with branching and terminal cells. Gemmae light-yellowish green, most 1-cell.

According to the system and classification of *Scapania* by Amakawa and Hattori (1953), Amakawa (1967), and Potemkin (1998, 2002), the new species belongs to section *Gracilidae* H. Buch. Among the species in the section, *S. paraphyllia* is more similar to *S. bolanderi* Aust. and *S. ampliata* Steph. *Scapania paraphyllia* resembles *S. bolanderi* by having toothed leaves and pseudoparaphyllia, but differs by having: (1) smaller plants, often reddish; (2) pseudoparaphyllia numerous, unbranched, growing not only in leaf axils but also on stems; (3) leaves divided into 1/3–1/2 of length and dorsal lobes as 1/4–1/3 size of ventral lobes; (4) cuticle of leaves rough, with large papillae up to 6–8 μm in diameter. *S. paraphyllia* is also similar to *S. ampliata* with similar leaf shape and mouth of perianth, but can be easily distinguished from the latter by having rough leaf cuticle and pseudoparaphyllia.

Acknowledgements We appreciate the support for this study from the National Natural Science Foundation of China (Major project on *Flora Cryptogamarum Sinicarum*, Grant Nos. 30370111, 30170076). We thank Prof. ZHANG Guang-Chu for his help in Latin diagnosis.

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中国浙江合叶苔属(合叶苔科)一新种——毛茎合叶苔

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摘要 描述了采自中国浙江九龙山的苔类植物一新种——毛茎合叶苔*Scapania paraphyllia* T. Cao, C. Gao, J. Sun & B. R. Zuo。该新种与腋毛合叶苔*S. bolanderi* Aust.相近，两种皆具带齿叶片和假鳞毛，但新种具如下特征可与腋毛合叶苔区别：(1)植物体小，通常红色；(2)假鳞毛多数，不分枝，不仅生于叶腋，茎上也有着生；(3)背脊为腹瓣长的1/4–1/3，背瓣为腹瓣大小的1/2–1/3；(4)叶角质层表面粗糙，具粗瘤，直径达6–8 μm。与另一个相似种*S. ampliata* Steph.相比，因新种具有粗糙的叶表面和假鳞毛等特征，也易于区别。

关键词 合叶苔属；毛茎合叶苔；合叶苔科；新种；浙江；中国